

RECOMBINANT REFLECTIONS

[Being diary notes written in late December, 1977 in the Ober Engadine (St. Moritz), reflecting upon the NIH Director's Advisor's Committee Meeting on the revision of the Recombinant DNA Guidelines, a gathering that had taken place earlier that month.]

We rolled into St. Moritz for our winter sojourn on the evening of December 20 [1977]. The presumption from the disquieting lack of whiteness on the right-of way of the narrow gauge Rhaetsian Bahn was confirmed by the taxi-driver at the Bahnhof. "Ya, wenig Schnee." Up on Corvilgia we could make out strips of brown grass mixed with the white. Next day the runs above the dorf proved unusable, a mixture of snow, grass and rock. One good run on the slopes of the "black" piste at Marguns was good until the Club Mediteranee discovered it. The next day gulps of skiers disgorged from the lifts, and this precious surface too was soon gone. . .

Woke at 1:45 on the morning of the 21st. A vivid and complex dream lay before me like sand from which the sea of unconsciousness had suddenly fallen back. It was a re-running in my mind of the DNA hearing of the 15th and 16th [of December], in the style of Stoppard or Moliere. I regret not having risen at once to write down what I remembered. The clarity faded slowly as the sea returned. The next morning enough fragments remained for me to attempt some recall.

There was a female narrator, speaking in the lines of Hesse, Goethe and Nabokov. She was describing nets of containments for organisms no longer presumed innocent until shown to be guilty of mis-using a fragment of some foreign genome. The narrator's voice was overlaid by that of another, pointing out the recklessness of human meddling and its often unsettling, usually dangerous consequences. The Title of "A Genetic Vessel" seemed to suggest itself to the sleeping audience of one.

To some of us, certainly to me, this, one of several hearings on the revision of the NIH Guidelines was the ultimate in morality plays, the roles drawn so starkly as to be farce--the representatives of the environmentalists, oblivious to the substance of the proposed revisions, clinging to the procedural, which they consummately exploit with waves of disruption. . . the scientists on the Recombinant Advisory Committee, almost glowing angelically in their well-scrubbed candor and sanity, fascinated and appalled by the behavior of their antagonists. The Director's Advisor's Committee, jury, prosecutors and defenders, superbly balanced in all the biases, a watch whose inertias were almost too evenly distributed to allow it to tick.

The chairman, by now become a virtuoso director of such ensembles, struggled to create some opportunity for movement, both rational and political, yet mindful that impatience and biting cynicism must not leave teeth-marks on the precious record. It had been made clear at the first such hearing by the roar of Judge Baselon, that the "record must hang out, warts and all" for possible airing at the bar.

The stars were out. Watson, of the first magnitude, in both reputation and now, silliness, as he makes his dramatic 'apology' for 'starting it all [by calling for guidelines at Asilomar]; now much too late to melt the giant snowball of anxieties collecting in the storm that followed. Yet despite the wild eyes, the dreadful hair, the childish stammer, Watson was curiously effective. One had to admit that by now we all knew deep in our hearts that the truly dreadful things imagined might result had learned a thousand years ago that their limited adaptations would never gave them the free run of the earth. Now they were sleeping in tubes, at the command of their human conquerors. The humans in turn were less wise than wily Nature, which had experimented with recombination of genomes for millenia and grown tired of trying to exceed the limitations of survival programmed by the Creator.

Still it was utterly human to imagine, with a shiver, that the 'power' might be more than we knew how to handle, something cosmic, unique. The laws of thermodynamics were beyond repeal. But every theater wanted its extravaganza. Maybe biology could create just one perpetuum mobile.

A second star, less light, more heat. John Tooze, choleric representative of EMBO, ESF, etc., scolds us Americans for our Puritan bondage to guidelines, constructed in a Napoleonic code instead of our heritage of common law, and scoffs at our fear of NEPA-covered law suits. He sputtered at the injunction sought by one Frederick citizen named Mack (suing in the name of his young son whom he presumably would also enjoin from riding in motor cars, breathing hydrocarbons in the air over route 495 or coming close to any other dangers, except his father's mind.)

The chairman seized the dramatic effect of this peroration, nailing it tight under his gavel, and declared recess to relieve the natural tensions of bladder, anxiety, thirst. Old Hans Stetten muttered that the flag of NIH should be at half-mast. America could not let herself be less careful, less involved in regulations, less egalitarian, of course. But could America afford to be less successful, and give up the lead in new discoveries to ever more aggressive competitors?

"Let us, ladies and gentlemen of the Committee, go once again around the table to capture the kernals of your wisdom. What are the thoughts that you wish the recorder to preserve as your measured conclusions, to be the sound-track to your image which the MIT archivist is even now imprinting on his colored tape?"

"Ms. Menard, research technician (or research assistant, colleague-person, member of an IRB); your words will be the first you have spoken at this meeting. What say you to the molecular biologists who order you to wash their genomes, clone the progeny, disinfect the recombinants? Unlike most of the learned or unlearned commentators, the scrupulous, the zealots, the philosophers, the unselfish, the egotistical and the bemused--you, Ms. Menard will know something about what you are saying. You will return to your laboratory, you say, and continue to expose yourself to recombinants. I dare say you have today been exposed to stranger recombinations in Bethesda than nest in your incubators in Seattle.

Mr. Beatty--student member of an IRB in Corvallis, Oregon, a state so environmentalist that it discourages immigration-- You have seen the flaring nostrils of Mr. Dach of the Environmental Defense Fund, heard the monotonous chant of Ms. Pfund (Sierra Club), wondered at Ms. Simring (Friends of the Earth). Are you impressed by the phantoms they have seen at dusk? Not apparently.

James Neal--with your fiercely bearded Winslow Homer face, dealer in eukaryote organisms that grow up and go to school, expert in higher primate genes. You have listened many times to your Ann Arbor colleagues before this meeting. To fey Ms. Susan Wright who is here acting in her life story (the Chair has begun to grow fond of her myopia); to Dr. Arthur Schwartz (the Chair has grown tired of hearing again about the atomic plant and the probability calculations). You do not deny he is brilliant, but you too have grown tired of his litany. So it seems has Schwartz, for he has sat out one of his allotted 5 minute periods. He at least is capable of feeling ennui. You are concerned, say you Dr. Neal, about other unseen tricks of recombination, the 'tip of the iceberg'. Agreed, Jim, we who struggle with a mixture of confusing science, NEPA, the F.A.P.A, the F.A.C.A, the House, the Senate, the NIH and the Interagency Committees, could be missing somethings beneath the surface.

Mr. Dennis Helms, Assistant D.A., Trenton. N.J., lawyer son of recent ambassador to Iran and prior head of C.I.A., you seem refreshingly sane. The vital discrepancies between the ways America and Europe accept these new technologies disturb you. It has also occurred to others. This is your first exposure to the experts among the expert. I hope you are not too shaken, or bitterly disappointed. You would revise, and drastically downward.

Dr. Mario Molina, famed pessimist of the ozone layer, slayer of aerosol cans, Chicano, chemist, quiet earnest person. You will find yourself on many ethnically balanced advisory groups after your walk-on performance here. You ask for reassurances about [E. coli] K-12. Harmless, Dr. Molina, buckets of the strain have seeped between the floors of the Rockefeller Institute, tons of it have risen in aerosols from Sharples centrifuges. You seem to be getting

your bearings in this crazy biologist's dilemma. I agree with you, Dr. Molina, downward revision, a steep decline in conditions placed on experiments. You are refreshingly ingenuous about 'process', the key cleanser in the legislative toilet; yes, perhaps there is a relationship of it to an annual law-school output in the thousands.

Doctor, lawyer, Marjorie Shaw, temporarily a dean, a flower of Texas, I shall carry your remarks to the end of this episode and beyond: "We have a dead body [the Guidelines] and we can't bury it."

Seated next to her is Dr. Karim Ahmed, staff-scientist of the Environmental Research Defense Fund--astute, yet steeped more in process than the gene, one who will limit his talk to the method of revision, for you are not going to waste an Arab's wisdom on Talmudic details concerning the bloody substance of the issues. Scientific facts are dangerous, each new study laps at the feet of the dragon carved in sand.

Peter Hutt, Mr. Regulatory Statute, late of F.D.A., now on a different schedule of compensation at Covington and Burling. You were the star of the last hearing; now you sit polishing your advocate's skills, teasing out the folly from statements of public and invited witnesses alike. Now what's this, Peter, returning to your favorite substitute for Congressional action, are you, to Section 361 of the Public Health Service Act, those emergency powers of the service to stamp out the menace of pestilence that you try to make us use against hypothetical dangers! Surely, Mr. Hutt, the nation's laboratories are not the Campbell Soup Company. Yes, it is also true, as you say, that a few F.D.A. lawyers let loose on the Guidelines could 'clean up' our regulatory errors in an afternoon. How many years do you think it would take us to come back from the regulatory wars, the civilian business of laboratory research beyond our capabilities. Why do you think we have made those "regulatory errors in the first place? Thank you, nevertheless, Mr. Hutt for filling a chair in Conference Room 6 with one less fool.

Ms. Simring rises to complain that the final Environmental Impact Statement is not responsive to "all the comments. There is, for example, no references to [N.Y's Atty General] Mr. Louis Lefkowitz" brilliant analysis" of recombination. Ms.\_\_\_\_\_, the dazzling blonde lawyer who prepared the brief, and presumably is responsible for the glaring scientific errors therein, is with us. Perhaps she can show you our references to these, Ms. Simring. And could you provide us with a record of the comments not commented upon, Ms. Simring.

Chancellor Robert Sinsheimer - your visage is gray, your brow more furrowed than at the last hearing. As the lone dissident whose peers respect, even as they suspect your motives, because you are an excellent scientist, and academician. God knows how valuable you are, for we have had to search far and wide for respectable opposition in this wearying charade. (Something less flawed than the Jonathon Kings, the George Walds, the Liebe Cavalieris) Do not these other witnesses we have invited to swell out the

opposition--from the FOE, the EDF, the AFL-CIO, the Canadian Broadcasting Co., from Ann Arbor, not grate on your nerves? Your rights to pessimism are unassailed (for none accuse you of the desperate buffoonery of Wald, the acid grief of Chargaff). Yet time, Bob, is against you, and the evidence for danger stubbornly elusive.

Dr. David Suzuki, brought from Vancouver to provide another source of concern from a reputable scientist, now reveals to us that he opposes recombinant technology because of the crimes of the Occidental majority against the Nisei in World War II.

Ms. Wright, lawyer, Associate Professor, member of the Committee for Human Rights, you take umbrage at the elite establishments and demand that the committees have the requisite complement of public members. Yours are rightfully earned positions, for you are black, bright, beautiful, talented and no token member of anything. Why should you try to help to bail the biologists out of their dilemma? You can stand on due process. What does it matter to you if the Federal Administrative Practice Act plays before empty houses for 18 months before one bacterium or DNA deemed harmless is eventually added to the list of exemptions? You've inherited enough ego-damage to a proud people to be be naturally suspicious. (Have I consciously been avoiding use of that word 'self-righteous' here?)

Sir John Kendrew, of the Nobel Prize and EMBO--Europe's NIH for molecular biology--you are urbane and defend our national caution, your upbringing makes rudeness awkward. Yet better than the violent Tooze, you have carried a note of concern closer to the dissenter's hearts. Yes, America is being too extreme.

Walter Rosenblith, Provost and Professor, your voice shows annoyance and your usual impeturbability have disappeared. The steps of containment seem less than rational to you. Your sense of liminal steps is offended at this sloppy scaling. Walter, does it matter, we cry, but you don't choose to hear. You are now adding fuel to the fire the environmentalists are lighting to boil us in the hot oil of Process.

Finally, we have ascended to the Augustinian. Professor of Theological Ethics Gustafson of the University of Chicago. What are theological ethics, Professor? In your swift response, the congregation is deftly dissected into the hermaneutically negative and the hermaneutically positive. Merci, Professor for the words to classify the all too obvious differences. Has this philosophical plane been above the needs of any of those present?

The chairman notes the time. Lacking dramatic material to close profoundly, he says "Goodbye and thank you all, I'm off to the Alps to ski. The dangers there are not hypothetical, the process is better understood, and the benefits more certain. But, I have not lacked here for introduction to high altitudes.

The dream had been too well remembered.

[Between the rDNA hearing and departure for Switzerland--and then to Morocco for Sylvestre evening with the King--I went to Ann Arbor with the right honorable Joseph A. Califano, Jr., Secretary of Health, Education and Welfare. We both received honorary doctorates from the University of Michigan.]

This excerpt was transcribed on July 26, 1985, from the Swiss student notebook found in the green diary covering December, 1977. In preparing a few remarks for my introduction to the Informational Seminar on the Genome, July 23, 1986, held at NIH, in Conference Room 10, I took snatches of the parts covering Watson, Tooze and Sinsheimer. The room and the assemblage reminded me of that earlier, more historical hearing on the revision of the DNA Guidelines.

Had we not succeeded at that time in preserving a voluntary continuation of the use of restriction enzymes, the 1986 conference on the genome might have been far off in the future.

D.S.Fredrickson

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